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(54) Hinge

(57) A hinge of the type used in motor vehicles to give a 270° opening movement of a door, for example the rear door of a van, has two hinge flaps (2, 3) respectively mounted on parallel

pivot pins (4, 6) in a bracket (1). Each flap has a gear (5, 7) fixed thereto and smooth control of opening of the hinge is achieved by the gears meshing together either directly or, in an alternative embodiment, through a series of two intermediate gears.

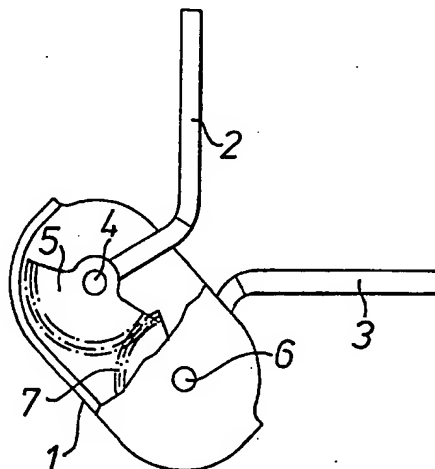


FIG. 1

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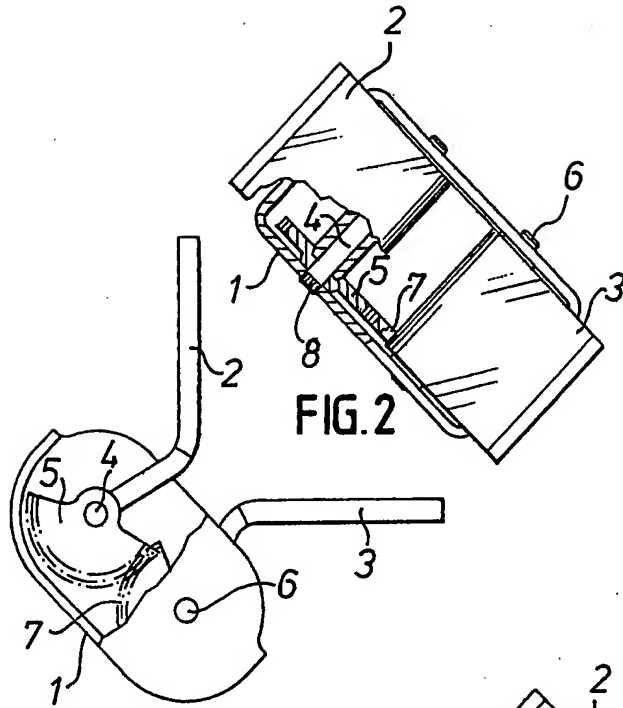


FIG. 1

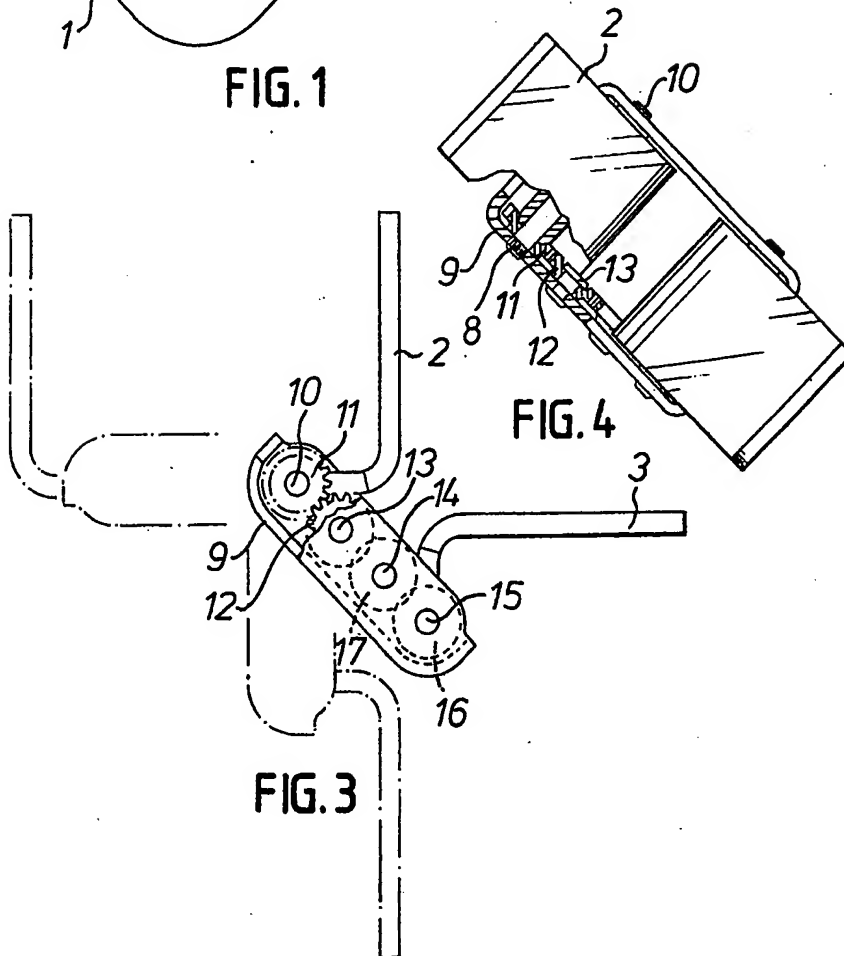


FIG. 3

FIG. 4

SPECIFICATION

Hinge

The present invention relates to a hinge and in particular to a hinge of the kind used in motor vehicles.

For many motor vehicle doors it is desirable to be able to pivot the doors through approximately 270° of arc. In the case of rear doors of a van, this allows the doors not only to open through about 90° of arc to gain access to the interior of the van, but also to pivot through a further 180° to lie substantially flat along the sides of the van.

The thickness of the side of a van necessitates hinging the door about two pivot points, and hinges of this type are described in British Patent Specifications Nos. 1 189 954 and 1 364 188. In both these specifications, hinges are described in which the pivots are alternately locked and freed to obtain control.

The present invention provides a hinge comprising two hinge flaps respectively mounted on two pivots such that the axes about which the two flaps pivot are spaced apart and parallel, the hinge flaps being connected together through a gear drive such that the flaps rotate together in opposite directions.

The pivot may be parallel hinge pins fixedly mounted in a bracket. The gear drive may comprise a gear, suitably a quadrant gear, mounted on each hinge flap for movement about the pivot thereof. The gears can either mesh directly or two intermeshing intermediate gears can be provided, one also meshing with the gear of the first flap and the other also meshing with the gear of the second flap.

The invention provides a hinge of the type allowing movement of a vehicle door through about 270° of arc which provides a smoother more even opening motion than conventional hinges of this type.

Reference is made to the drawings, in which:

Figure 1 is a part sectional view of a first embodiment of the present invention;

Figure 2 is a part sectional plan view of the embodiment of Figure 1;

Figure 3 is a part sectional side view of an alternative construction according to the present invention; and,

Figure 4 is a part sectional plan view thereof.

In Figures 1 and 2 a bracket 1 has a pair of cranked hinge flaps 2 and 3 rotatable about respective hinge pins 4 and 6 each secured in the bracket 1 by a knurled end 8 thereof being forced into an aperture formed in one side of the bracket

1. Mounted securely with each flap 2 and 3 is a quadrant gear 5 and 7. The gears 5 and 7 mesh together so that, as the flap 2 moves in one direction about the hinge pin 4 (as seen in Figure 1), the gear 5 will rotate the gear 7 thus

moving the hinge flap 3 in the opposite direction about the hinge pin 6. Thus, by the effect of the gears 5 and 7 a relative movement between the hinge flaps 2 and 3 in the order of 270° of arc is obtained.

In Figures 3 and 4 a construction is illustrated in which intermediate gears are provided between the hinge flaps 2 and 3. A bracket 9 is provided and has hinge pins 10 and 15 secured in a manner similar to that described with reference to Figures 1 and 2. The hinge flaps 2 and 3 have respectively secured thereto gear wheels 11 and 16 and these gear wheels are themselves respectively in mesh with gear wheels 12 and 17 which are freely rotatably mounted on the bracket 9 by rivets 13.

As the hinge flap 2 in Figure 3 moves in one direction about the pin 10 so the gear wheel 11 will rotate gear wheel 12 in mesh with gear wheel 17 which in turn rotates wheel 16 in the opposite direction moving the hinge flap 3 to positions as seen in dotted outline in Figure 3, thus providing for relative movement of the hinge flaps 2 and 3 through an angle of approximately 270°.

CLAIMS

1. A hinge comprising two hinge flaps respectively mounted on two pivots such that the axes about which the two flaps pivot are spaced apart and parallel, the hinge flaps being connected together through a gear drive such that the flaps rotate together in opposite directions.

2. A hinge according to Claim 1, wherein the pivots are parallel hinge pins fixedly mounted in a bracket.

3. A hinge according to Claim 1 or 2, wherein the gear drive comprises a gear mounted on each hinge flap for movement about the pivot thereof.

4. A hinge according to Claim 3, wherein each gear is a quadrant gear.

5. A hinge according to Claims 3 or 4, wherein the gears on the hinge flaps intermesh directly.

6. A hinge according to Claim 3 or 4, wherein the gear drive includes two intermediate gears which intermesh and one of which meshes with the gear of a first hinge flap while the other of which meshes with the gear of the second hinge flap.

7. A hinge, substantially as described with reference to, or as illustrated by Figures 1 and 2, or Figures 3 and 4 of the drawings.